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Don. E. McAllister

FISH COLLECTIONS FROM THE OTISH MOUNTAIN REGION, CENTRAL QUÉBEC, CANADA

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Fish Collections from the Otish Mountain Region, Central Québec, Canada

Don E. McAllister

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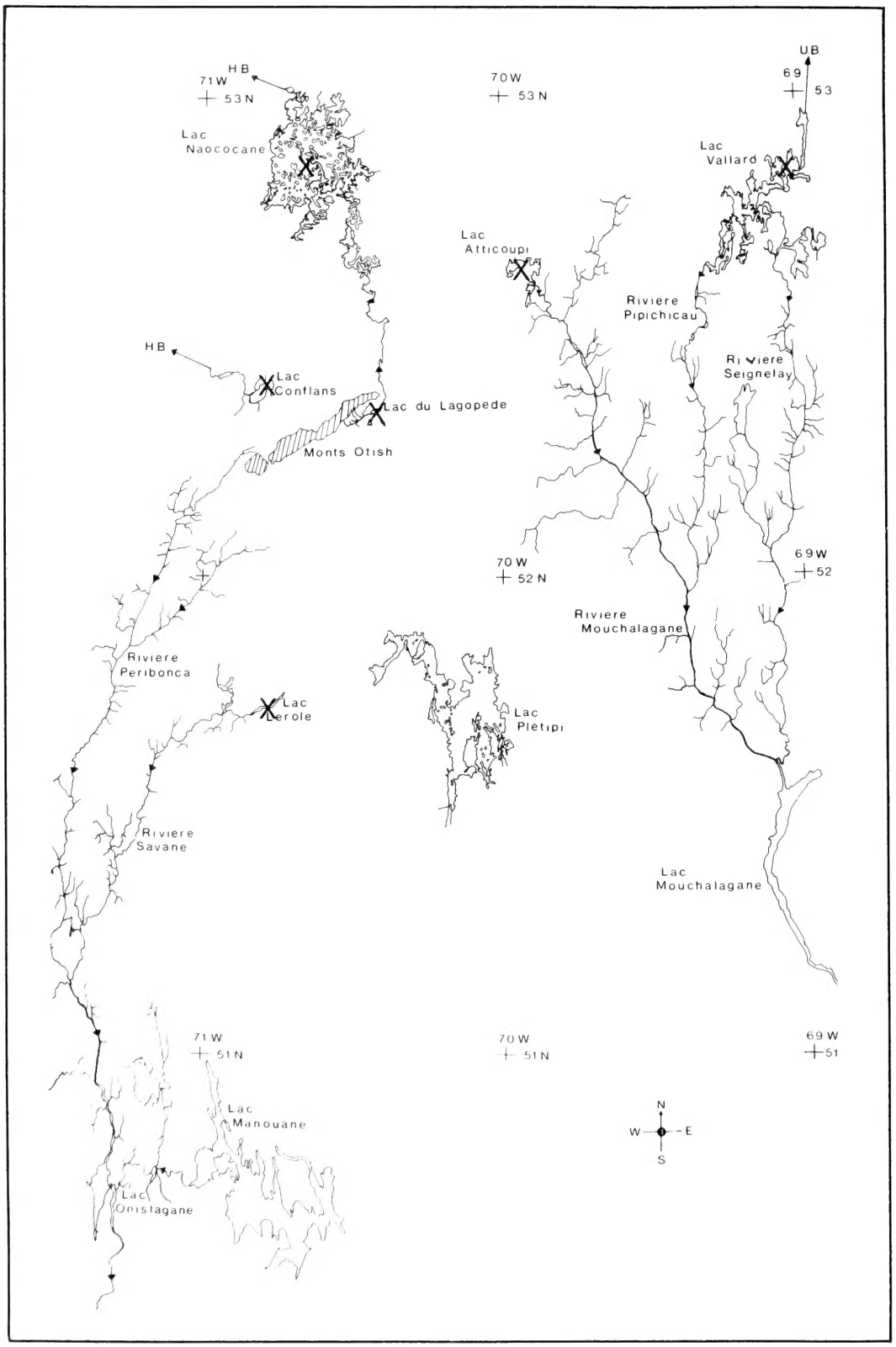

Fig. 1. Map of the Otish Mountain region. Collecting sites are shown by Xs. Arrows indicate the direction of flow in rivers.

SUMMARY

A brief survey in July 1971 revealed the following species in several lakes and streams within 113 km (70 miles) of the Otish Mountains in central Quebec: Coregonus clupeaformis, Prosopium cylindraceum, Salmo salar, Salvelinus fontinalis, Salvelinus namaycush, Esox lucius, Couesius plumbeus, Catostomus catostomus, Catostomus commersonii, Lota lota and Cottus bairdii. These records fill a large gap in the known distribution of most of these species for central Quebec. A theory is proposed that Salmo salar in Hudson Bay and its tributaries may have originated from headwater transfer rather than marine migration.

RÉSUMÉ

Un relevé sommaire effectué en juillet 1971 a révélé la présence des espèces suivantes dans plusieurs lacs et cours d'eau situés dans un rayon de 113 km (70 milles) des monts Otish au centre du Québec: Coregonus clupeaformis, Prosopium cylindraceum, Salmo salar, Salvelinus fontinalis, Salvelinus namaycush, Esox lucius, Couesius plumbeus, Catostomus catostomus, Catostomus commersonii, Lota lota et Cottus bairdii. Ces données comblent une lacune importante dans la répartition connue de la plupart de ces espèces au centre du Québec. On émet la théorie que le Salmo salar a colonisé la baie d'Hudson et ses tributaires à partir des cours d'eau de l'intérieur plutôt qu'à la suite d'une migration en eau salée.

The Otish Mountain region is one of deep interest because the headwaters of three major drainages (Hudson Bay, Ungava Bay, and Gulf of St. Lawrence) are found there. The area was only recently deglaciated - about 7000 years ago (GSC Map 1257A, Retreat of Wisconsin and Recent Ice in North America) and contains numerous lakes, water courses and bogs. Knowledge of the fish distribution in central Quebec will provide information on the dispersal routes by which fishes attained their present distribution in northern Quebec. This paper makes a preliminary contribution to such knowledge.

Reports on the fishes of Quebec were published as early as 1664 in Pierre Boucher's Histoire véritable et naturelle des moeurs et productions du Pays de la Nouvelle France, vulgairement dite le Canada (Rousseau and Legendre, 1966). Work has continued steadily since then, especially along the St. Lawrence River system, in the Gulf of St. Lawrence, Ungava and Hudson Bays and in their closely adjoining fresh waters. These have culminated in general works such as Legendre (1954), Bergeron (1960), and Leim and Scott (1966).

But central Quebec, unserved by roads or railways, its rivers interrupted by falls and rapids, has been little studied. Fowler (1961), Harper (1961), LeJeune (1963a and 1963b), McAllister (1964), McAllister and Bleakney (1960), Power and Oliver (1961), and recently Hazel, Mauffette et Legendre (1974) report on and summarize the records, largely peripheral, for this general region. These papers, and maps in Scott and Crossman (1973) show scarcely any records within a hundred miles of the Otish Mountains.

The present survey was carried out from 6 to 12 July 1971 using a float equipped Beaver aircraft. A base camp was established at Lac du Lagopède just north of Mont Yapaeitso, the highest peak (3700 feet) of the Otish Mountains (Fig. 1). Lac Lerole, 40 miles south was visited en route to the base camp. Two circuits were flown from the base camp to Lac Atticoupi, Lac Vallard, Lac Naococane, Lac Conflans and back on July 7 and July 8. On the first circuit, gill nets with 2 to 4 inch stretched meshes were set, on the second they were picked up. On both circuits collections were made using a weasel trawl (a small otter trawl) towed with an outboard driven inflatable rubber boat. A few additional collections were made using a seine, dipnets, and a minnow trap.

The expedition was ably led by Henri Ouellet (ornithology), accompanied by Brian Kidd (malacology), Michael Shchepanek (botany) and the author (ichthyology), all of the National Museum of Natural Sciences, Ottawa. Other expedition members were Michael Dadswell (crustaceology, then of Carleton University, Ottawa) and François Ukus (soil studies, Centre d'Études nordiques). To his fellow expedition members and to the pilots, the author is indebted for their assistance. Brian Kidd drafted the map. Vianney Legendre, Service de la Faune, Montreal, C.G. Gruchy, Henri Ouellet and M. Shchepanek of the museum criticized the manuscript. The National and Historic Parks Service generously provided funds for aircraft charter, through the kind offices of W. Cheffins.

Results

Table 1 summarizes the species obtained at each collection site and in each drainage basin. More detailed information including ecological and collection data is on file at the Ichthyology Section, National Museum of Natural Sciences, Ottawa. Examples of most species were donated to the Laboratoire de Recherches, Service de la Faune du Québec, Montréal. A total of eleven species was collected, 5 salmonids, 1 esocid, 1 cyprinid, 2 catostomids, 1 gadid, and 1 cottid in the 14 collections.

Surface temperatures at collection sites were relatively warm, between 12° and 16°C. At 40m the temperature was 11 to 13°C, at 60m 8°C. Waters were generally clear (with Secchi disk readings of 9 to 23 feet), with gravel, sand or boulder bottoms close to the shore and little or no aquatic vegetation. At least half the days during our stay were rainy. Aside from a few small patches in the mountains, there was no snow on the ground. Shchepanek (1973) reported on the terrestrial vegetation.

Discussion

Most of the species in this report represent new records for the Otish Mountain region (Scott and Crossman, 1973). Except for brook charr, Salvelinus fontinalis, lake charr, Salvelinus nanaycush, lake whitefish, Coregonus clupeaformis, and walleye, Stizostedion vitreum, no fishes have been reported within a hundred mile radius of the base camp. Yet none of our collections contained range extensions of species of fish in any cardinal direction, although in several species they did fill in a large unknown area in the middle of their known distribution in Quebec.

As no lake, except possibly Lac du Lagopède, was thoroughly sampled, deductions based on the absence of a species from a given lake or even a drainage system must be made with some caution. Collections were made from two or more water bodies in each major drainage system except for the Ungava Bay drainage. The Hudson Bay drainage with 10 species was found to be the richest, followed by the Gulf of St. Lawrence drainage with 9 species and the Ungava Bay drainage with 6 species. As Lac Vallard has connections with both the Gulf of St. Lawrence and Ungava Bay its species were included in the counts for both basins.

Certain species which are known peripherally (Scott and Crossman, 1973) to the collecting area and which might have been expected in our collections are: the cisco, Coregonus artedii; longnose dace, Rhinichthys cataractae; pearl dace, Semotilus margarita; ninespine stickleback, Pungitius pungitius; and the slimy sculpin, Cottus cognatus. Their apparent absence may be real or due to the lack of adequate collecting.

One species which was not expected this far inland was the ouananiche, Salmo salar. Surprisingly, rapids on the Rivière Mouchalagane and the Rivière Manicouagan have not prevented the penetration of this species to Lac Atticoupi. Ouananiche has been recorded from a Hudson Bay tributary, Kogaluk River by Le Jeune and Legendre (1968) and there are verbal reports of Atlantic salmon from the east coast of Hudson Bay (Hunter, 1968). One might have supposed that these owed their origin to southeastward straying in the sea from existing populations in Ungava Bay. However the occurrence of this species in headwaters of the Gulf of St. Lawrence drainage adjacent to headwaters of the Hudson Bay drainage suggests an alternate origin for Hudson Bay populations. Present (see concerning Lac Vallard, above) or past links between the two drainages or stream capture may have permitted Salmo salar to cross the watershed and descend downstream to Hudson Bay. Vianney Legendre (in litt.) has documented additional linkages between drainages. The discovery of Salmo salar in the Hudson Bay watershed above waterfalls would offer support to the present theory.

Rod and line fishing was tried at Lac du Lagopède. Both brook charr and lake charr were caught. The catch rate was about 2 fish per man-hour, suggesting a sport fishery potential.

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TABLE 1

NUMÉRO DE CATALOGUE/ CATALOG NO.	NMC 71-219	NMC 71-220	NMC 71-221	NMC 71-221-A
ENDROIT/LOCALITY	Lac Lerole	Lac Lerole	L. du Lagopède	L. du Lagopède
LATITUDE & LONGITUDE	51°44'N 70°46'W	51°44'N 70°46'W	52°20'N 70°25'W	52°20'N 70°25'W
BASSIN/DRAINAGE	St. Laurent	St. Laurent	Baie d'Hudson	Baie d'Hudson
SPECIES (NO. COLLECTIONS)				
SALMONIDAE				
Coregonus clupeaformis (4) grand corégone/lake whitefish		x		
Prosopium cylindraceum (5) ménomini/round whitefish				
Salmo salar (1) saumon atlantique/Atlantic salmon				
Salvelinus fontinalis (4) omble de fontaine/brook charr				x
Salvelinus namaycush (7) touladi/lake charr			x	
ESOCIDAE				
Esox lucius (2) grand brochet/northern pike		x		
CYPRINIDAE				
Couesius plumbeus (4) méné de lac/lake chub				
CATOSTOMIDAE				
Catostomus catostomus (6) meunier rouge/longnose sucker			x	
Catostomus commersonii (5) Meunier noir/white sucker	x	x		
Catostomus sp. meunier/sucker				
GADIDAE				
Lota lota (3) lotte/burbot				
COTTIDAE				
Cottus bairdii (1) chabot tacheté/mottled sculpin				
Nombre d'espèces/ Number of species 11 espèces	1	3	2	1

NUMERO DE CATALOGUE/ CATALOG NO.	NMC 71-222	NMC 71-222-A	NMC 71-223	NMC 71-224
ENDROIT/LOCALITY	L. Atticoupi	L. Atticoupi	L. Vallard	L. Naococane
LATITUDE & LONGITUDE	52°38'N 69°56'N	52°38'N 69°52'N	52°50'N 69°02'W	57°47'N 70°38'W
BASSIN/DRAINAGE	St. Laurent	St. Laurent	St. Laurent & Baie d'Ungava	Baie d' Hudson
SPECIES (NO. COLLECTIONS)				
SALMONIDAE				
Coregonus clupeaformis (4) grand corégone/lake whitefish	x		x	x
Prosopium cylindraceum (5) ménomini/round whitefish			x	
Salmo salar (1) saumon atlantique/Atlantic salmon	x			
Salvelinus fontinalis (4) omble de fontaine/brook charr				
Salvelinus namaycush (7) touladi/lake charr	x		x	x
ESOCIDAE				
Esox lucius (2) grand brochet/northern pike				x
CYPRINIDAE				
Couesius plumbeus (4) méné de lac/lake chub			x	
CATOSTOMIDAE				
Catostomus catostomus (6) meunier rouge/longnose sucker	x		x	
Catostumus commersonii (5) Meunier noir/white sucker	x		x	x
Catostomus sp. meunier/sucker				
GADIDAE				
Lota lota (3) lotte/burbot		x		
COTTIDAE				
Cottus bairdii (1) chabot tacheté/mottled sculpin				
Nombre d'espèces/ Number of species 11 espèces	5	1	6	4

NUMERO DE CATALOGUE/ CATALOG NO.	NMC 71-225	NMC 71-226	NMC 71-227	NMC 71-228
ENDROIT/LOCALITY	Lac Conflans	ruisseau trib. à Lac du Lagopède	sortie du lac du Lagopède	Lac du Lagopède
LATITUDE & LONGITUDE	52°24'N 70°48'W	52°21'N 70°24'W	52°21'N 70°24'W	52°20'N 70°25'W
BASSIN/DRAINAGE	Baie d' Hudson	Baie d'Hudson	Baie d'Hudson	Baie d'Hudson
SPECIES (NO. COLLECTIONS)				
SALMONIDAE				
Coregonus clupeaformis (4) grand corégone/lake whitefish				
Prosopium cylindraceum (5) ménomini/round whitefish	x		x	x
Salmo salar (1) saumon atlantique/Atlantic salmon				
Salvelinus fontinalis (4) omble de fontaine/brook charr	x	x	x	
Salvelinus namaycush (7) touladi/lake charr	x		x	
ESOCIDAE				
Esox lucius (2) grand brochet/northern pike				
CYPRINIDAE				
Couesius plumbeus (4) méné de lac/lake chub		x	x	
CATOSTOMIDAE				
Catostomus catostomus (6) meunier rouge/longnose sucker	x	x	x	
Catostomus commersonii (5) Meunier noir/white sucker				
Catostomus sp. meunier/sucker				
GADIDAE				
Lota lota (3) lotte/burbot		x		
COTTIDAE				
Cottus bairdii (1) chabot tacheté/mottled sculpin				
Nombre d'espèces/ Number of species 11 espèces	4	4	5	1

NUMERO DE CATALOGUE/ CATALOG NO.	NMC 71-229	NMC 71-230
ENDROIT/LOCALITY	Lac du Lagopède	Lac du Lagopède
LATITUDE & LONGITUDE	52°20'N 70°25'W	52°20'N 70°25'W
BASSIN/DRAINAGE	Baie d'Hudson	Baie d'Hudson
SPECIES (NO. COLLECTIONS)		
SALMONIDAE		
Coregonus clupeaformis (4) grand corégone/lake whitefish		
Prosopium cylindraceum (5) ménomini/round whitefish	x	
Salmo salar (1) saumon atlantique/Atlantic salmon		
Salvelinus fontinalis (4) omble de fontaine/brook charr		
Salvelinus namaycush (7) touladi/lake charr	x	
ESOCIDAE		
Esox lucius (2) grand brochet/northern pike		
CYPRINIDAE		
Couesius plumbeus (4) méné de lac/lake chub		x
CATOSTOMIDAE		
Catostomus catostomus (6) meunier rouge/longnose sucker		
Catostomus commersonii (5) Meunier noir/white sucker		
Catostomus sp. meunier/sucker	(x)	
GADIDAE		
Lota lota (3) lotte/burbot	x	
COTTIDAE		
Cottus bairdii (1) chabot tacheté/mottled sculpin	x	
Nombre d'espèces/ Number of species 11 espèces	4	1

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